



MILE-HIGH VIDEO 2023

Live Streaming UHD 4K Stacks through Distributed Encoding

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First Question: Why Live Stream in UHD 4K?

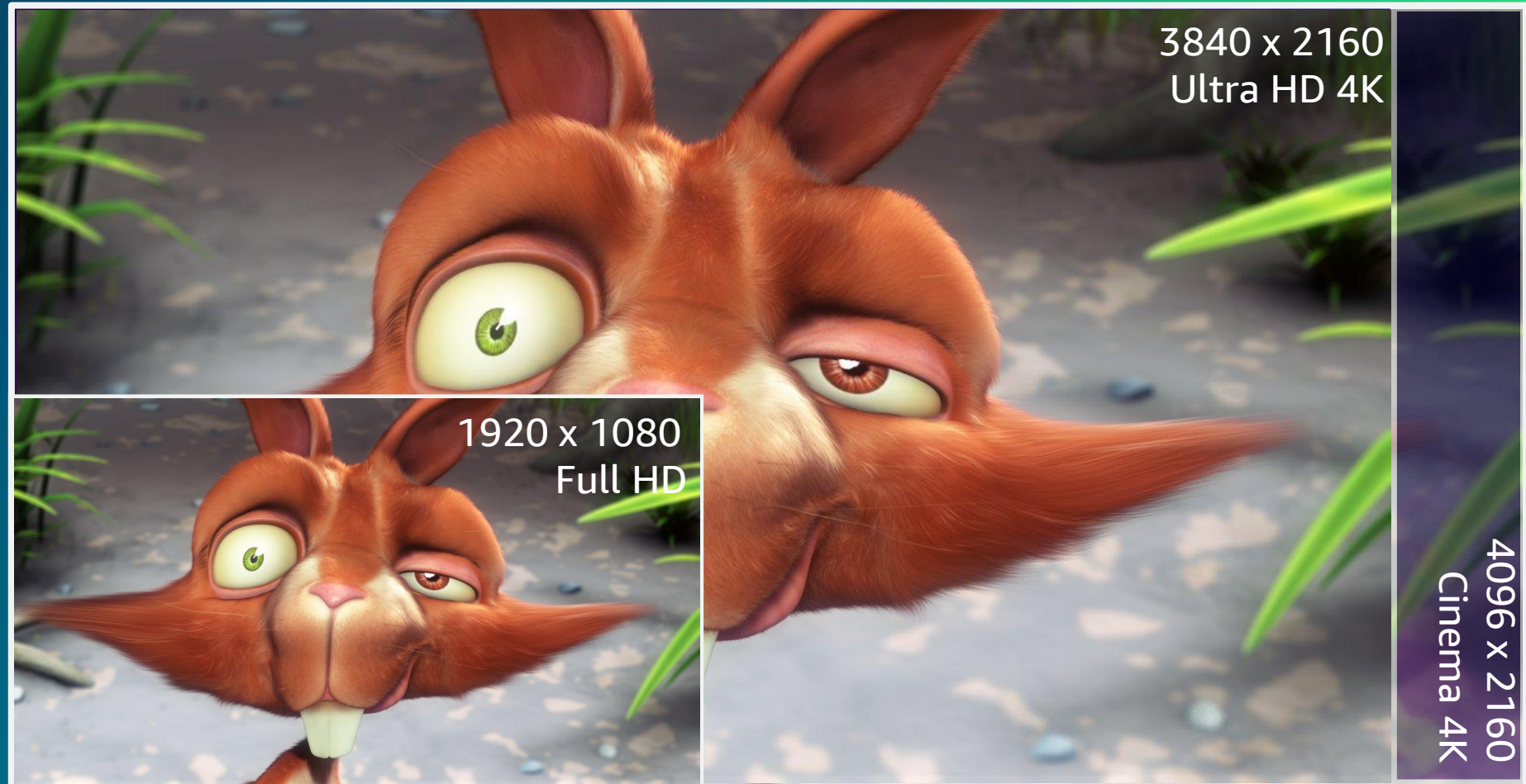
- Synonymous with **high-quality** streaming
- Matches the capabilities of today's displays

The screenshot shows three Amazon Prime TV listings. Each listing includes a product image, title, price, and specifications. Red circles highlight the '4K UHD' text in the product titles of the Samsung and LG listings.

Product	Price	Display Size	Refresh Rate	Resolution	Model Year
SAMSUNG 60-Inch Class QLED 4K UHD 60B Series Dual LED Quantum HDR, Motion Xcelerator, Object Tracking Sound Lite, Ultra Slim Design, Smart TV with Alexa Built-In...	\$797.99 (11% off \$897.99)	60 inches	60 hertz	4K	2022
Sony 85 Inch 4K Ultra HD TV X80K Series: LED Smart Google TV with Dolby Vision HDR KD85X80K- 2022 Model	\$1,598.00 (11% off \$1,798.00)	85 inches	120 hertz	4K	2022
LG 75-Inch Class UQ9000 Series Alexa Built-in 4K Smart TV (3840 x 2160), 60Hz Refresh Rate, AI-Powered 4K, Cloud Gaming (75UQ9000PUJ, 2022)	\$866.99	74.5 inches	60 hertz	4K	2022

UHD 4K vs 1080p

- UHD 4K is ...
 - 4X Compute Workload
 - 4X Uncompressed Payload

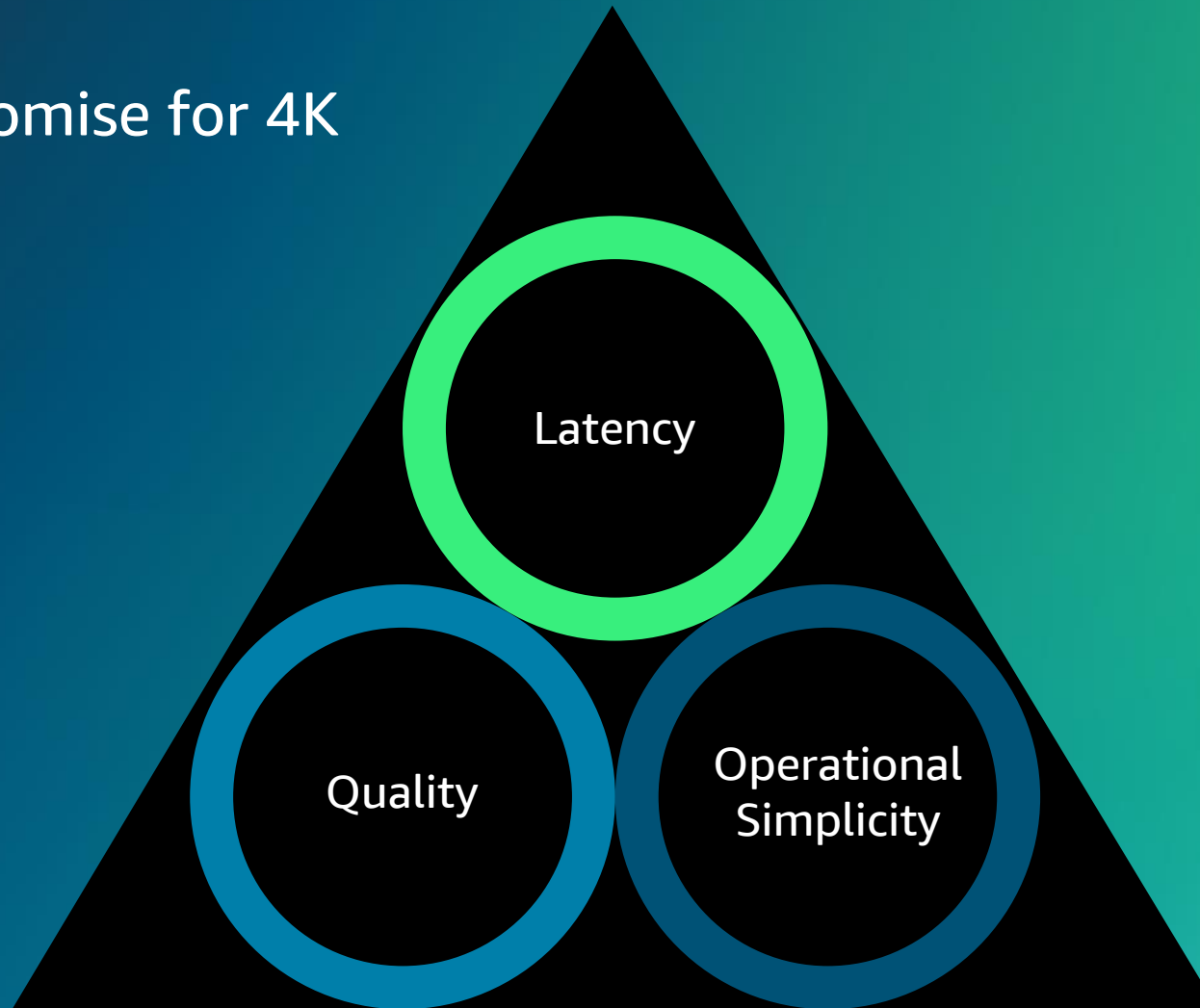


End-to-End Live Streaming

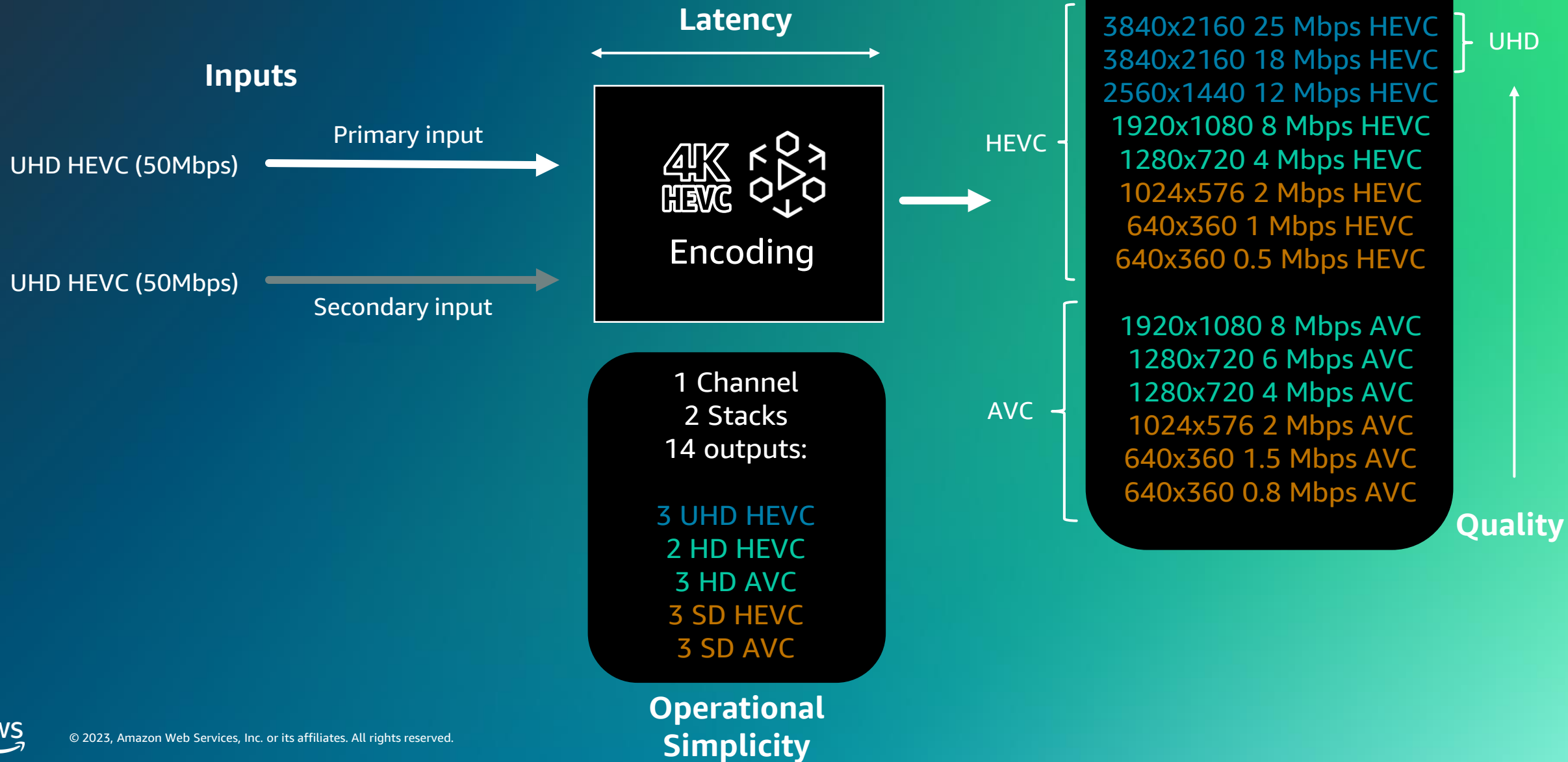


Customer Iron Triangle

- Won't Compromise for 4K

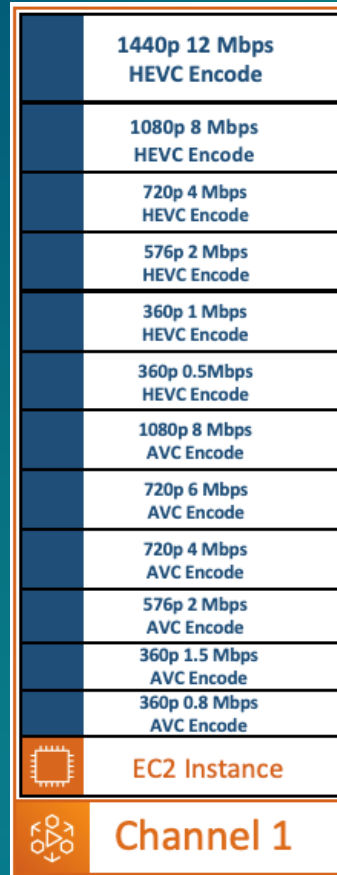


Request: Full UHD Stack

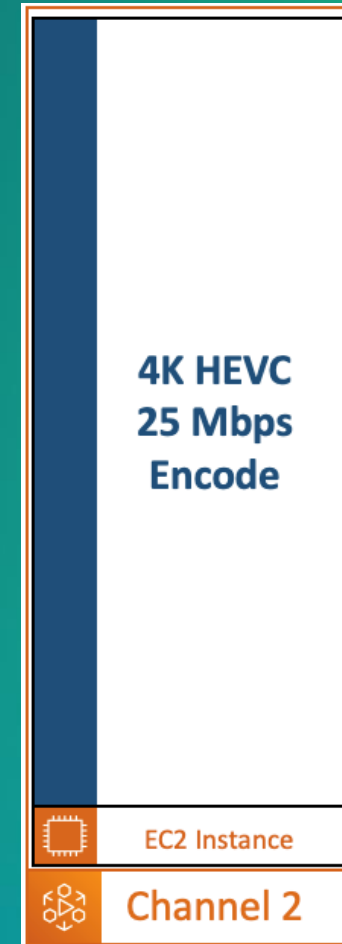


Problem: UHD Stack Complexity

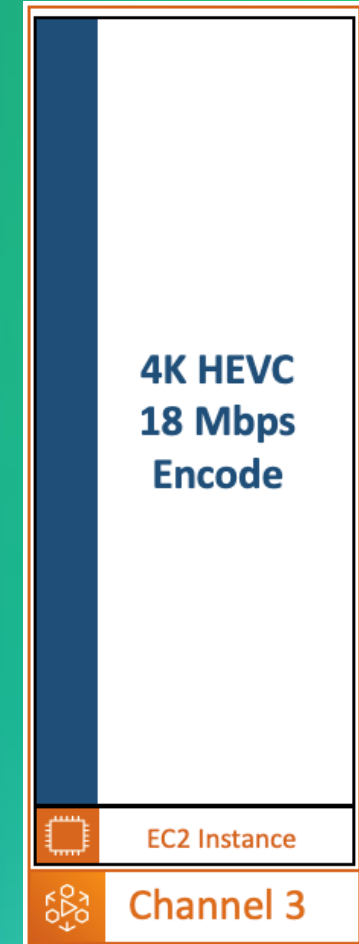
- Full UHD Stack requires 3 Sync'd Channels
- Complex Operational Workload
- Requires Input Timecodes



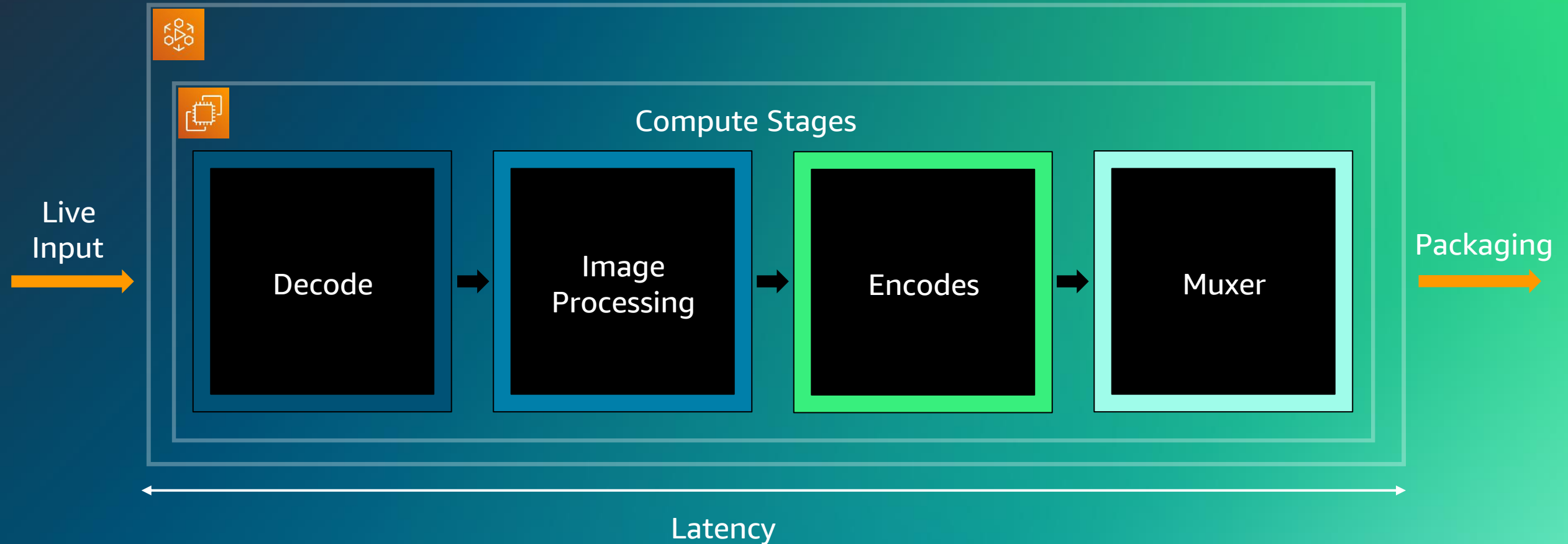
OR



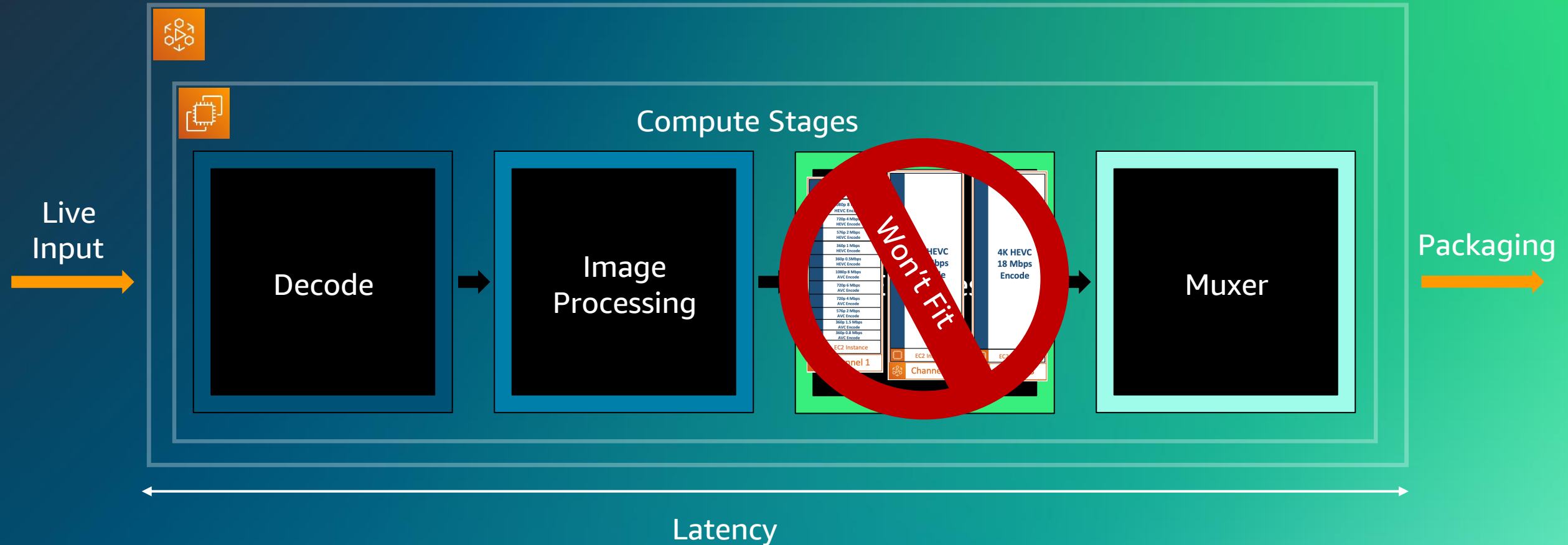
OR



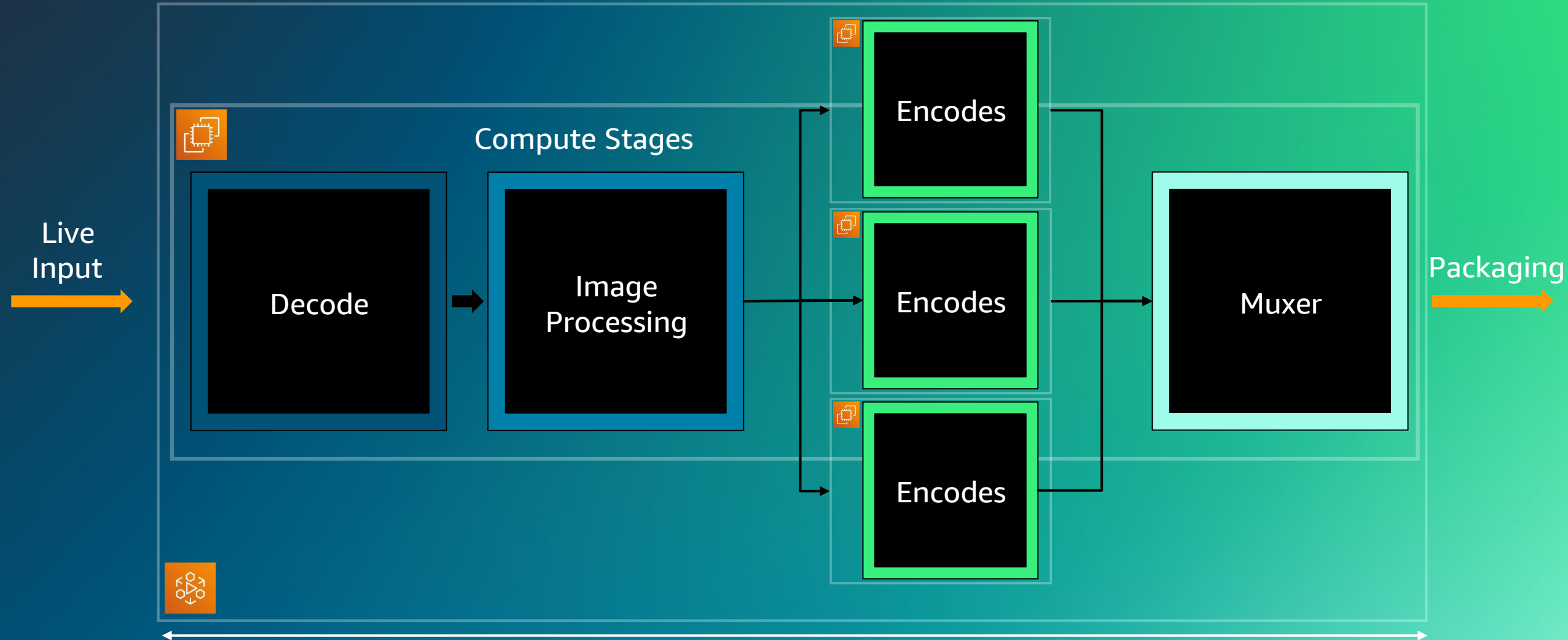
Overview: Video Processing Pipeline



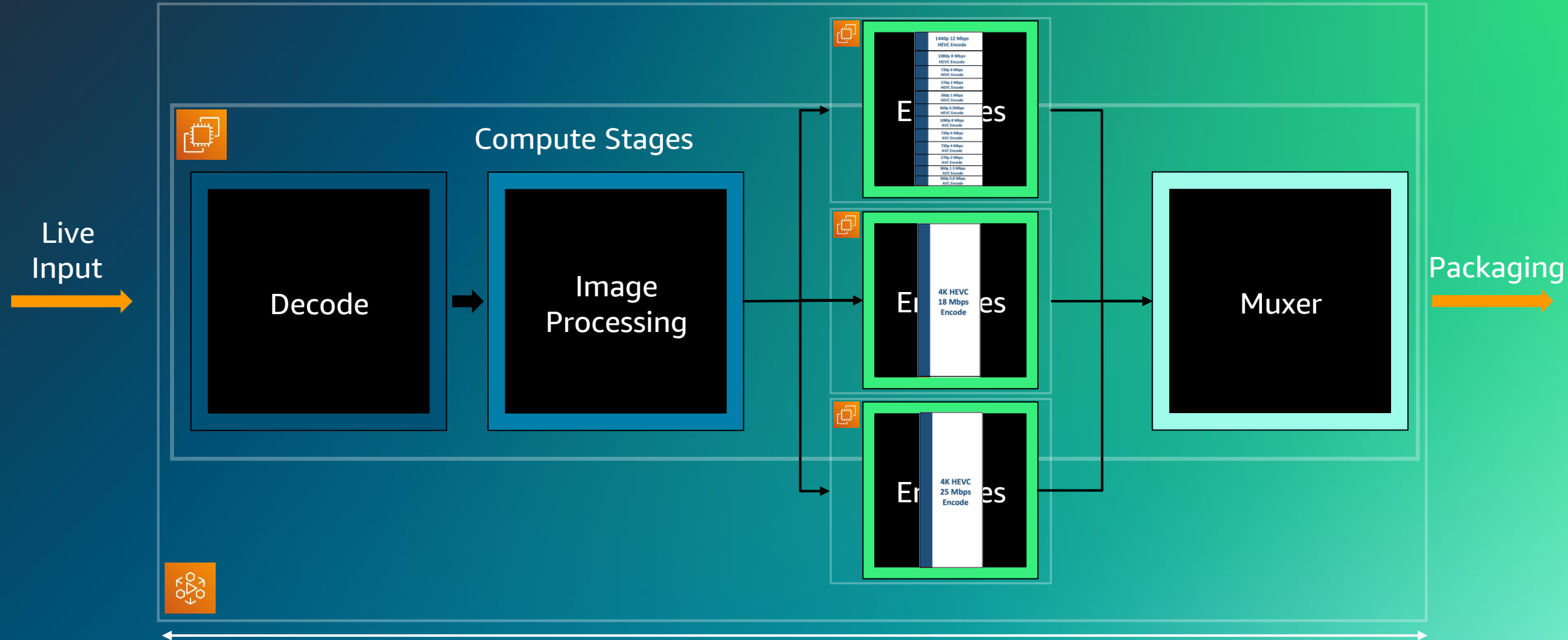
Overview: Video Processing Pipeline



Solution: Distributed Encoding

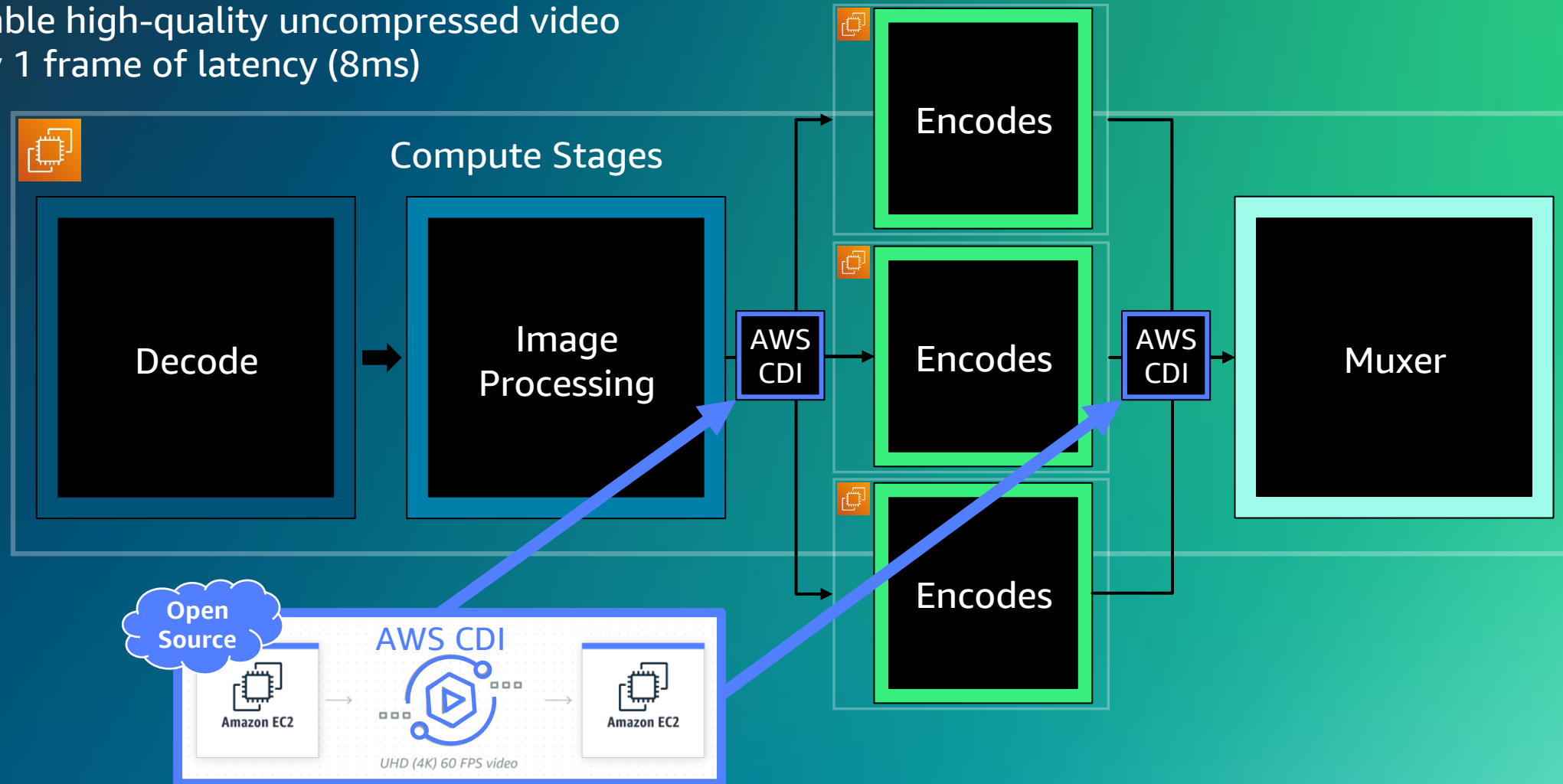


Solution: Distributed Encoding



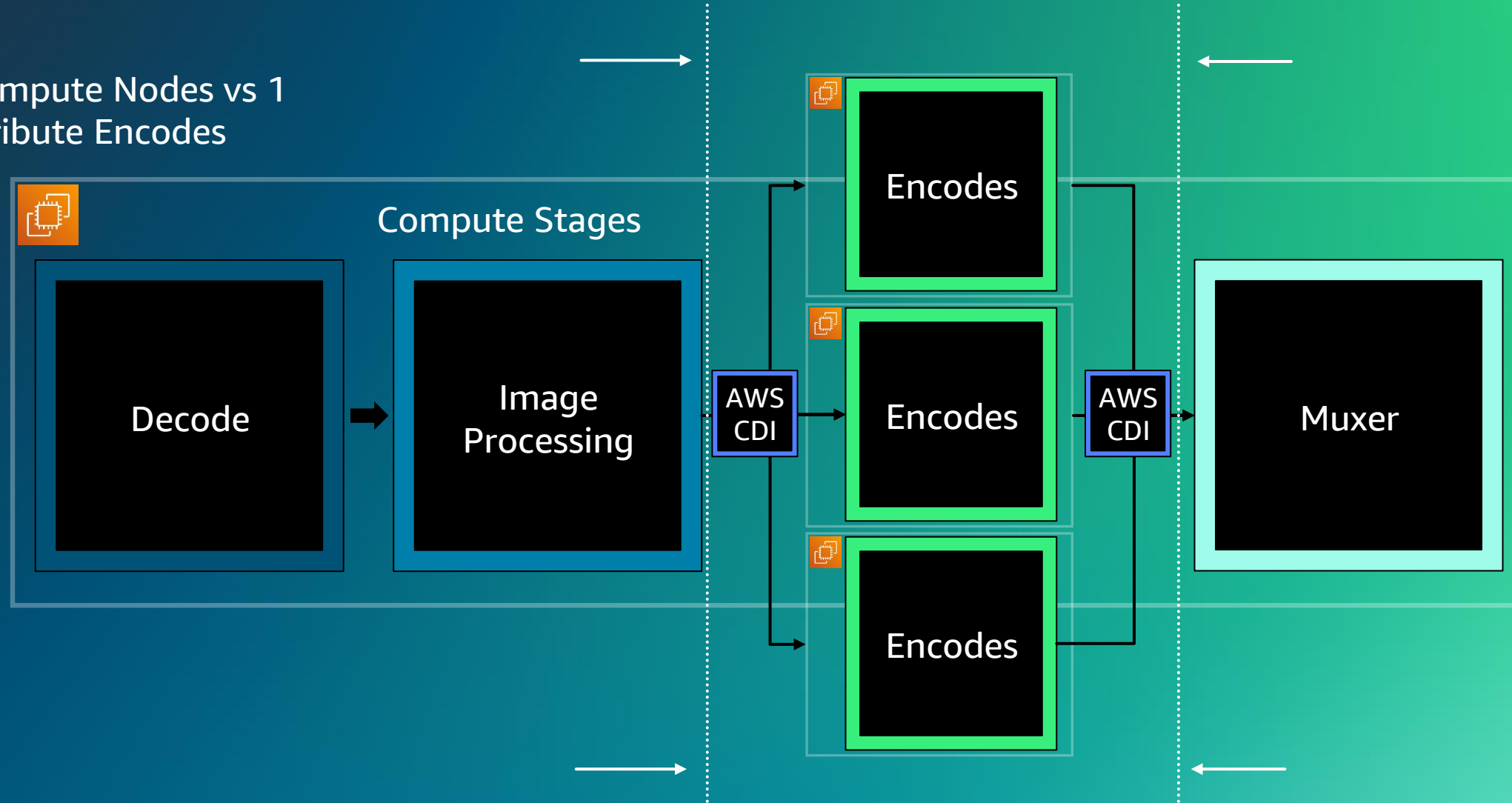
How: AWS CDI (Cloud Digital Interface)

- Reliable high-quality uncompressed video
- Only 1 frame of latency (8ms)



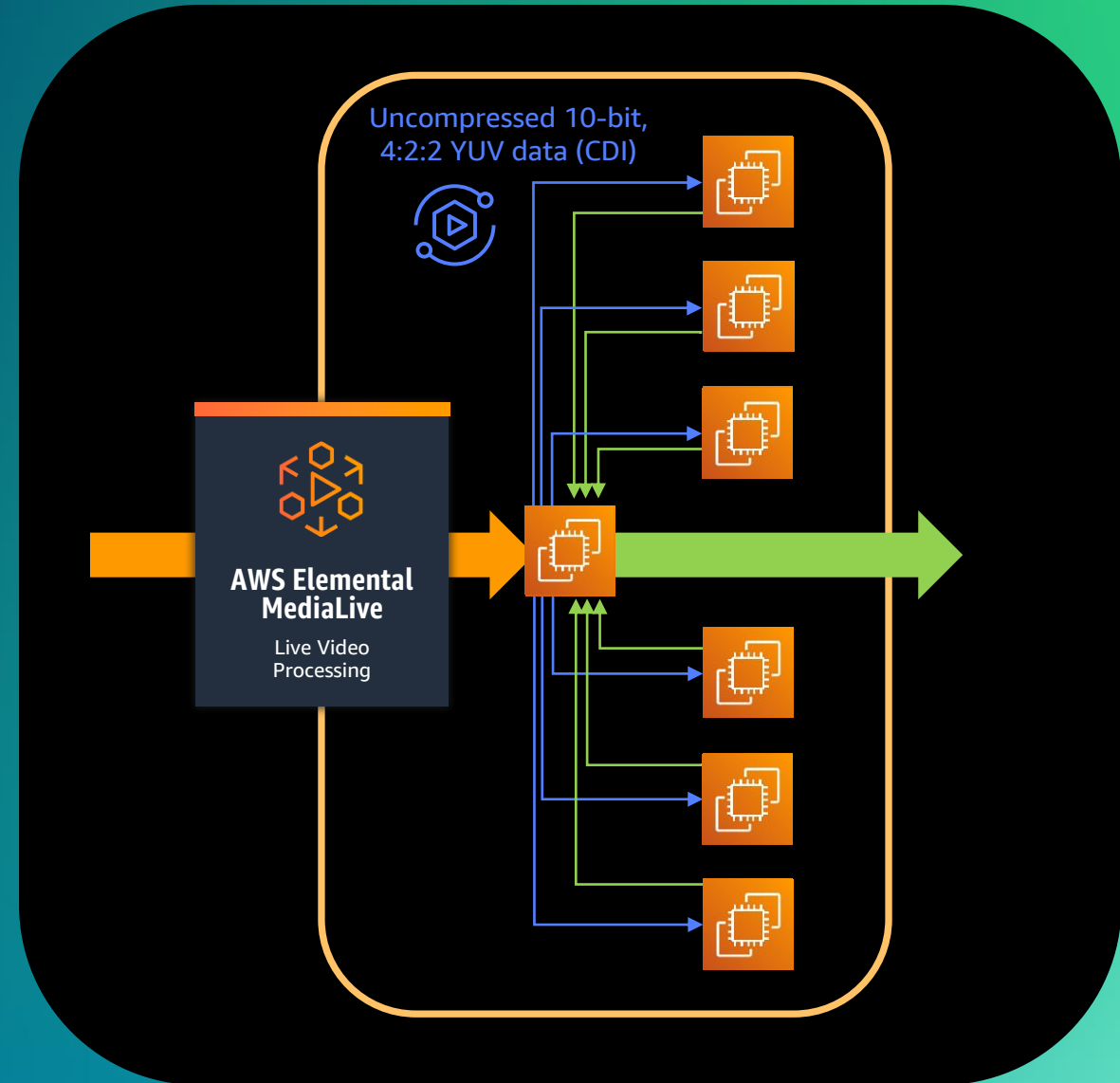
How: Data Plane Split + Compute Scaling

- 4 Compute Nodes vs 1
- Distribute Encodes



Conclusion

- AWS CDI + EC2 enables
 - Preserved Simplicity/Latency/Quality
 - Scalable Distributed Workflows
 - End-to-End streaming of Live UHD Full Stacks



Thank you!

